



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,241	03/10/2004	Mark Muenzer	074313.0107	2985

58174 7590 03/28/2007
BAKER BOTTS, L.L.P.
98 SAN JACINTO BLVD.
SUITE 1500
AUSTIN, TX 78701-4039

EXAMINER

THOMAS, LUCY M

ART UNIT PAPER NUMBER

2836

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/797,241

Applicant(s)

MUENZER ET AL.

Examiner

Lucy Thomas

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-17 is/are rejected.
- 7) ☒ Claim(s) 18, 2-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 13 and 17 are objected to because of the following informalities:

Recitation of "a feedback path provided between output and control terminals of a power driver" in Claim 13 is unclear. It appears that the Applicant meant the power switch as the power driver, as the recited feedback, comprising a transformer and amplifier, is connected to the control terminal of a power switch. Appropriate correction is required.

Recitation of "feedback path comprising a transformer in series with an amplifier" in Claim 17 is unclear. The specification shows the amplifier symbol designated as U and connected to one terminal block, U designated as transformer. Appropriate correction of claim language and/or details of the feedback connections in the specification are required.

Allowable Subject Matter

2. The indicated allowability of claims 13-15 is withdrawn in view of the newly discovered reference to Kuennen et al. (US 2003/0015479). Rejections based on the newly cited reference follow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2836

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuennen et al. (US 2003/0015479). Regarding Claim 13, Kuennen discloses a circuit arrangement for limiting over voltage at a freewheeling device with a semiconductor power switch (see Figure 5, Column 14, lines 34-41), comprising at least a first and a second semiconductor power switch, 254, 256 each parallel-connected with a freewheeling device being connected in series, an output terminal arranged between the first and second semiconductor power switch for coupling to an inductive load (see output terminal between 254 and 256, Column 4, lines 48-51), wherein a feedback path is provided to a control terminal of a power switch, the feedback path comprising a transformer 232 and an amplifier 210 connected to a common input of a push-pull stage (formed by 220, 222) of a gate driver 146 connected to the control terminal.

Regarding Claim 14, Kuennen discloses that a voltage drop across internal and/or external leakage inductances is utilized for the feedback (change in current due to switching forms voltage across parasitic/leakage inductance of the power switch).

Regarding Claim 15, Kuennen discloses that a current rise is fed back through the induction in a transformer 232.

Regarding Claim 17, the recited steps of the method claim would necessarily be performed when using the circuit arrangement recited in Claim 13. Therefore, please see the rejection for Claim 13 recited above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuennen et al. (US 2003/0015479) in view of Marquardt et al. (US 5,650,906). Regarding Claim 16, Kuennen discloses MOSFET transistor as the semiconductor power switch (Column 14, lines 15-21, 34-36). Kuennen does not disclose an IGBT power transistor used the semiconductor power switch. Marquardt discloses a circuit arrangement for limiting an overvoltage at a freewheeling device arranged in parallel with a semiconductor power switch (Figures 1 and 2), comprising at least a first and a second semiconductor power switch T1, T2 (IGBT or MOSFET, Column 2, lines 4-8, Column 3, lines 44-46) each parallel-connected with a freewheeling device 24, 26 being connected in series, an output terminal R (S, T) arranged between the first and second semiconductor power switch for coupling with to an inductive load. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the circuit of Kuennen and to use IGBT as the power switch as taught by Marquardt, because MOSFET and IGBT are art recognized equivalent power semiconductor switches (see Marquardt, Column 2, lines 4-8) and IGBTs are preferred due to lower cost and high efficiency compared to high power MOSFETs.

Allowable Subject Matter

7. Claims 18 and 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: Regarding Claim 18, Kuennen discloses the steps of controlling one of the semiconductor power switches into the turned-off state and the other one into the non-turned-off state (Column 13, lines 6-24). Kuennen does not disclose switching the turned-off semiconductor power switch, at least at the instant of the occurrence of an overvoltage at the associated freewheeling device or during the decay of a current spike, temporarily on to such an extent that a short-time current is generated at the output of the semiconductor power switch.

Marquardt discloses a method for limiting an over voltage at a freewheeling device arranged in parallel with a semiconductor power switch (Figures 1 and 2), comprising at least a first and a second semiconductor power switch T1, T2 (IGBT or MOSFET, Column 2, lines 4-8) each parallel-connected with a freewheeling device 24, 26 being connected in series, an output terminal R (S, T) arranged between the first and second semiconductor power switch for coupling with to an inductive load, the method comprising steps of providing a feedback path with an amplifier and push-pull gate driver and controlling one of the semiconductor power switches into turned-off state and the other one into non-turned-off state (Column 1, lines 8-11, Column 4, lines 21-30, Abstract).

Art Unit: 2836

Marquardt does not disclose the step of switching the turned-off semiconductor power switch, at least at the instant of the occurrence of an overvoltage at the associated freewheeling device or during the decay of a current spike, temporarily on to such an extent that a short-time current is generated at the output of the semiconductor power switch. This limitation, in combination with the other recited elements, are not disclosed by the Prior Art of record, and therefore allowable. Claims 2-6 depend on Claim 18.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy Thomas whose telephone number is 571-272-6002. The examiner can normally be reached on Monday - Friday 8:00 AM - 4:30 PM EST.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2836

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LT

March 22, 2007



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800